IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

AF/2613
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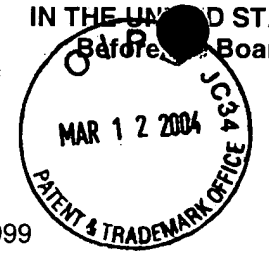
P.2.



In re Patent Application of
CHRISTOPOULOS et al.
Serial No. 09/394,428
Filed: September 13, 1999
Title: DOWN SCALING OF IMAGES

Atty Dkt. 2466-35
C# M#
TC/A.U.: 2613
Examiner: Behrooz M. Senfi
Date: March 12, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☒ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**
Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner. ($ 330.00) $

☐ An appeal **BRIEF** is attached in triplicate in the pending appeal of the above-identified application ($) $

☐ Credit for fees paid in prior appeal without decision on merits -$ ( )

☒ A reply brief is attached in triplicate under Rule 193(b) **(no fee)**

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s) **($110.00/1 month**; $420.00/2 months; **$950.00/3 months**; $1480.00/4 months) $

SUBTOTAL $

☐ Applicant claims "Small entity" status, enter ½ of subtotal and subtract -$( )
☐ "Small entity" statement attached.

SUBTOTAL $

Less month extension previously paid on -$(0.00)

TOTAL FEE ENCLOSED $ 0.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.** A duplicate copy of this sheet is attached.

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By Atty: John R. Lastova, Reg. No. 33,149

Signature: _____

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REPLY BRIEF

Appellants respond in this Reply Brief to certain points raised in the Examiner's Answer dated January 15, 2004.

On page 6 of the Examiner's Answer, in the "Response to Argument," second paragraph, it is said, "For example figures 1 and 6, where a 16 x 16 size block is broken down into ... where a 16 x 16 (4 x (8 x 8)) blocks are produced from 8 x 8 block DCT block (10b)." The last part of this sentence suggests that after obtaining the four (8 x 8) DCT blocks in block 10b of Fig. 1, the DCT of the corresponding 16 x 16 block can be obtained by simply juxtaposing or multiplexing the calculated 8 x 8 DCT coefficients. This is mathematically untrue. Also, Fig. 1 of Lee shows that the calculation of the 16 x 16 DCT coefficients is performed in block 10 in parallel to the calculation of the 8 x 8 DCT coefficients in block 10b. The purported juxtaposition of the 8 x 8 coefficients to produce a 16 x 16 DCT block of coefficients is not shown in Fig. 1.

Indeed, Figs. 1 and 2 illustrate different parts of the transmitting system and must be considered together with each other. Fig. 2 illustrates an example selection of calculated coefficient blocks to be transmitted. In this example, the calculated coefficients of eight blocks of size 2 x 2, six blocks of size 4 x 4, and two blocks of size 8 x 8 are multiplexed with each other under the control of logic circuits. The multiplexing simply combines the coefficients, i.e., puts them in a row or serializes them to produce DCT coefficients for the input 16 x 16 pixel block. But these coefficients are not the same coefficients that would have been obtained by calculating a DCT of size 16 x 16 on the input 16 x 16 block. In other words, the finally generated DCT coefficients for the input 16 x 16 pixel block in Fig. 2 are not coefficients of a 16 x 16 DCT. Such coefficients are always calculated in block 10a of Fig. 1 but are not used in most cases since the dividing into subblocks can provide more efficient coding for transmission.

In the same quoted sentence from page 6 of the Answer, Fig. 6 is referred to where a procedure is depicted when receiving already-calculated DCT coefficients. The IDCTs of various block sizes are calculated in parallel in blocks 116a - 116d, and the original pixel data is obtained by simply combining the results of the IDCTs. The block sizes of a 16 x 16 frame divided in subblocks in the same example case are shown. Some of the received data is used to calculate eight IDCTs of block size 2 x 2, other received data is used to calculate six IDCTs of size 4 x 4, and the remaining received data is used to calculate two IDCTs of size 8 x 8. If an IDCT of size 16 x 16 would be calculated for the same received data, a very different result would be obtained that would not resemble the original pixel frame data input to the transmitting system illustrated in Figs. 1 and 2.

The Examiner's interpretation of Lee is in error for the reasons set forth above and in the original Brief. The outstanding rejections should be reversed.

Respectfully submitted,

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